# **Supervisor Project Idea**

### Supervisor

Insert a brief CV and/or external link, the total number of publications, the ORCID link, 5 of the most significant/recent publications, and a list of funded projects and awards. Please indicate if you are a MSCA fellow yourself and if you have already been a MSCA Supervisor before. max 300 words

Michela Casella's (MD, PhD) curriculum presents a highly qualified profile in the field of cardiology and electrophysiology, with solid academic and clinical experience. She is currently an Associate Professor at the Università Politecnica delle Marche and has held research and medical leadership positions in prestigious institutions such as the Centro Cardiologico Monzino and the Policlinico Gemelli. She has obtained the National Scientific Qualification for the role of Full and Associate Professor and is involved in numerous nationally and internationally funded research projects. https://orcid.org/0000-0002-5322-1742.

- 1. Different Approaches to Atrial Fibrillation Ablation in Heart Failure Patients: Temporal Trends and Clinical Outcomes. Bergonti M. et al. JACC Clin Electrophysiol. 2025 Jan 23. doi: 10.1016/j.jacep.2024.12.004
- 2. Clinical features and outcomes in carriers of pathogenic desmoplakin variants. Gasperetti A. et al. Eur Heart J. 2025 Jan 21. doi: 10.1093/eurheartj/ehae571.
- 3. Results of ICE-Guided Isolation of the Superior Vena Cava With Pulsed Field Ablation. Pierucci N. et al. JACC Clin Electrophysiol. 2025 Jan 15. doi: 10.1016/j.jacep.2024.11.009.
- 4. Differences in underlying cardiac substrate among S-ICD recipients and its impact on long-term device-related outcomes: Real-world insights from the iSUSI registry. Gasperetti A. et al. Heart Rhythm. 2024 Apr. doi: 10.1016/j.hrthm.2023.12.007.
- 5. Implantable loop recorders in patients with Brugada syndrome: the BruLoop study. Bergonti M. et al. Eur Heart J. 2024 Apr 7. doi: 10.1093/eurheartj/ehae133.

Scientific Grant

2024- Staff member

PNRR-MCNT3-2023-12376978. SEARCH PROJECT: Statin effect on

arrythmogenic cardiomyopathy disease progression.

2018-Principal Investigator

<u>MIUR RF-2018-12367090</u>: Cardiac Arrhythmia catheter ablation procedures guided by x-Ray imaging: N-Acetylcisteine Protection Against radiation induced Cellular damagE (CARAPACE Study).

2016-Staff Member

<u>European Research Area Network on Cardiovascular Diseases (ERA-CVD)</u>: Joint Transnational CallCardiomyocyte-non myocyte interplay as a novel platform for mechanistic insights and therapeutic approaches in arrhythmogenic cardiomyopathy heart failure

2016-Staff Member

<u>TELETHON - GGP16001</u>: Contribution of lipids and their oxidized metabolites on Arrhythmogenic Cardiomyopathy pathogenesis

2015-Staff Member

<u>PRIN 2015ZLNETW:</u> Arrhythmogenic cardiomyopathy: cross-talk among cardiomyocytes, stromal cells and sympathetic neurons in disease pathogenesis

Provide the name the reference department and a brief description of the research group, including external links, and available instrumentations and infrastructures. max 300 words

The Department of Odontostomatologic and Specialized Clinical Sciences is the scientific and educational organizational structure of the UNIVPM University (https://www.disco.univpm.it/). The research group is currently formed by an Associate Professor, a Post-doc researcher, a PhD student and medical residents. The infrastructure consists of an electrophysiology laboratory equipped with the most advanced electroanatomical mapping systems, also featuring integration capabilities with imaging. Additionally, it includes the Faculty of Engineering (UNIVPM), equipped with Al instruments.

#### Research thematic area

Indicate the MSCA panel and keywords that better describe your field of competence and research thematic area of your interest for a MSCA PF supervision – you may add extra keywords and text if necessary.

MSCA Panel Chemistry (CHE) - Economic sciences (ECO) - Information Sciences and Engineering (ENG) - Environmental and Geosciences (ENV) - Life Sciences (LS) - Mathematics (MAT) - Physics (PHY) - Social Sciences and Humanities (SOC)	MSCA Keywords MSCA Panels & Keywords.pdf <u>documento</u>	<u>Free</u> <u>keywords</u>	<u>Free text</u>
Life sciences (LS)	L4-Physiology, Pathophysiology and Endocrinology	Cardiovascular diseases	

**Contact details** (including email address of the supervisor)

Prof. Michela Casella, m.casella@univpm.it

#### OPTIONAL:

## Title and goals

Provide the title of the topic and a short summary if you already have a project idea. Projects ideas can also be defined and discussed with potential candidates later. max 200 words Title: AI-DRIVEN ELECTROANATOMICAL MAPPING ANALYSIS FOR VENTRICULAR ARRHYTHMIA AND SUDDEN CARDIAC DEATH PREDICTION.

Backgroud: This study explores AI's role in analyzing electroanatomical mapping (EAM) data of the left ventricle to predict major arrhythmic events (MAE). AI models such as Machine Learning (ML) and Deep Learning (DL) identify substrate patterns and assess their prognostic impact.

- Ventricular arrhythmias are a leading cause of cardiovascular death.
- EAM is used to identify arrhythmogenic areas.
- Current manual EAM interpretation lacks precision and consistency.
- Artificial Intelligence (AI) can improve diagnosis and risk stratification.
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Project OBJECTIVES:

- Develop AI-based models for EAM data analysis.
- Validate predictive models against clinical outcomes.
- Identify novel metrics to enhance diagnosis and treatment.
- Implement an AI framework for clinical decision support.